

## ABSTRACT

The invention relates to a cooling apparatus, especially for cryogenically preserving biological samples, comprising a duct (5) for delivering a coolant (3) to a cooling chamber (1), a heater (6) that has an adjustable first heating performance (P2) for heating the coolant (3) delivered to the cooling chamber (1), a first temperature sensor (8-10) for measuring the temperature (T2-T4) in the cooling chamber (1), a second temperature sensor (7) for measuring the temperature (T1) of the coolant (3) delivered to the cooling chamber (1), and a regulator (11) for regulating the temperature. Said regulator (11) is embodied as a multiple regulator which detects several temperatures (T1-T4) as control variables and/or adjusts several heating performances (P1, P2) as manipulated variables. The invention further relates to a corresponding operating method.